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A Seminar Title On the History and Evolution of Agricultural Extension in the Ethiopia Country

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Annotation: *Agricultural extension service began work in Ethiopia since 1931, during the establishment of Ambo Agricultural School. But a formal Agricultural extension started since Alemaya Imperial College of Agriculture and Mechanical Arts (Haramaya) was constructed since 1953.The extension activities of Ethiopia during the last 50 years reveals that a range of extension approaches has been used. The approaches tended differ with each successive political regime. Different extension approaches in different political regimes, during the imperial regime the responsibility for national extension administration to the Ministry of Agriculture, extension service became one of the departments in the Ministry. And during the military regime the land reform proclamation banned the private ownership of rural lands and declared that land would be distributed to the tillers without compensation to former owners. Because of the political instability and major structural changes in the rural areas, including the formation of peasant associations and producers' cooperatives as well as the implementation of the land reform, it was not possible to carry out this plan. There was not much organized and coordinated extension work in the country until the beginning of the 1980. At the current Extension service of Ethiopia in 1991 the T & V extension approach was adopted as a national extension system with major government financing until its replacement by the Participatory Demonstration and Training Extension System in 1995. The latter was adopted from the SaSakawa Global 2000 (SG 2000) extension strategy. Agricultural extension service in Ethiopia can be given by different mandatory level such as at federal level by ministry of Agriculture, At Regional level Bureau of Agriculture, At Woreda level Agricultural and Natural Resource office, and at Farmer Training center level Development agent and different stockholders have responsibility of giving extension especially agriculture related extension to need holders. In Ethiopia there are different extension approaches model such as Chilalo agricultural development model (CADU), minimum package project I and II, Peasant Agricultural Development program, participatory demonstration and training extension system, farmers field school, Farmers training center and Agricultural technical and Vocational Education training (ATVET) these are the different extension approaches in Ethiopia starting from the begging up to current extension service respectively.*

Keywords: *Agricultural Extension Service, Ethiopia, Extension Approach*

1. Introduction

In Ethiopia, agricultural Extension service is said to be operational since 1930, but begun work since 1931 during the establishment of the Ambo Agricultural School which is offering general education with a major emphasis on agriculture. However, a formal extension was started only after the establishment of the Alemaya College of Agriculture. Extension is underway in the country for over 70 years. Over this period, several development as well as extension approaches were employed side by side (Belay, 1959).

The birth of an agricultural extension service in Ethiopia dates back to 1953 when the then Alemaya Imperial College of Agriculture and Mechanical Arts, currently known as Haramaya University started to provide research-based extension services to the surrounding communities based on the agreement made between the Ethiopian and US governments, following the Land Grant University approach. The concepts of the land grant system of the United States of America (USA) and were mandated to have three responsibilities: teaching, research and extension. The extension mandate of the college included transferring local research outputs and technologies to farmers, and importing technologies and improved practices from abroad and introducing them to farmers (Ibrahim, 2004).

Since then, the country has implemented different types of agricultural extension systems, for instance, College System of Agricultural Extension Program (1953 to 1960s), Comprehensive Package Project (1960-1970s), the Minimum Package Project (1970-1980s), Peasant Agricultural Development Project and Farming System

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Research Project (1985-1990s). Major challenges encountered during these periods, among others, included instability of the extension system and management, unsustainability of the extension programs and projects (WADU, CADU, MPP etc.), lack of common perceptions between technology generators and extension personnel, inadequate representation and participation of farmers, inadequate trained manpower, limited finances, one way communication and insufficient or even absence of monitoring and evaluation. Over the years a number of reforms have been taken place to address gaps in the various systems adopted leading to the current system. In 1993, SG-2000 started to demonstrate agricultural technologies as a pilot on major cereal crops.

The demonstration conducted by SG-2000 clearly showed great successes and captured the attention of top level officials and development practitioners, encouraging them to replicate the experience of SG-2000 nationwide. To help improve the agricultural extension system of the country, the Bill and Melinda Gates Foundation (BMGF) supported a review of the Ethiopian agricultural extension program in partnership with the Government of Ethiopia in 2009 (IFPRI, 2009). The review identified the system's strengths and constraints with the aim of improving the system and identifying ways in which such improvements might be scaled up in the future.

Under Ethiopia's current Agriculture Development-Led Industrialization (ADLI) strategy, the extension system remains a critical tool. The government of Ethiopia firmly believes that an effective and efficient extension system must play an important role to transform smallholder subsistence agriculture to commercial agricultural production system by facilitating adoption and utilization of yield- and quality-increasing agricultural technologies.

Ethiopia's extension system has great potential to help farmers throughout the country. With approximately 21 development agents (DAs) per 10,000 farmers, and even more in the high-potential areas, Ethiopia has one of the densest agricultural extension systems in the world. The Ethiopian extension system uses FTCs-based agricultural extension approach, coupled with farmer groups such as one-in-five and development units which are considered to be an entry point for the grass-roots extension services and for the bottom up extension approach. FTCs assisted by development agents and farmer groups are expected to give a wide range of agricultural extension services forward looking and sustainable farmer-owned agricultural extension system. Currently the government has established close to 12,500 FTCs which are functioning at different levels. Also established were 25 ATVETs to produce development agents in different fields of specializations.

2. LITERATURE REVIEW

2.1. Development of Agricultural Extension Work in Ethiopia

Agricultural extension work in Ethiopia began since 1931 during the establishment of the Ambo Agricultural School which is offering general education with a major emphasis on agriculture. In 1943 with the creation of ministry of agriculture the country witnessed the commencement of limited extension activities in different area. The real agricultural extension work began in the early 1950 by the establishment of the Imperial Ethiopian College of Agriculture and Mechanical Arts (IECAMA, now Haramaya University) with the assistance of the United States of America under the Point Four Programe. When the College was founded it was given the mandate to develop and deliver a national programme in agricultural extension (Belay, 1959).

The agricultural extension services rendered were more of a regulatory nature and included providing advice in soil conservation through the grow-more-trees campaign; better variety of seeds and seedlings; cleaning and seed selection; the protection of game fish; the preservation of hides and skins (Haile Selassie, 1959).

2.2. Levels of Agricultural Extension in Ethiopia

Agricultural extension system in Ethiopia can be given at different level; from that at federal level, at regional level, at Woreda level and at farmer training center. At Federal level ministry of Agriculture and Agricultural extension directorate have a mandate for extension development in different purpose. At regional level bureau of Agricultural development have a mandate to oversees the integration and harmonization of activities within regions and develop or adopt packages and provide support to Woreda offices of Agriculture in delivering extension at the Woreda level. And even though at Woreda level offices of agricultural and natural Resource have a mandate to work for effective extension delivery (http://www.worldwide-extension.org/africa/ethiopia/s-ethiopia). The provision of effective extension services are at farmer training center. As clearly mentioned in FTC guidelines by MoA (2009) FTC have been established to perform tasks such as promotion of the use of improved technology and practices, gathering organizing and disseminating information relating to market. So that agricultural extension service in Ethiopia have different levels starting ministry of Agricultural at federal level to farmers at farmers training center.

2.3. Extension Service in Ethiopia

Agricultural extension provides research-based educational and informational programs typically for rural populations. Extension service has meant different things to different people. According to Moris (1991) defined

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extension as the mechanism for information and technology delivery to farmers. This conceptualization of the extension service has been the basis for the Transfer of Technology (TOT) extension model.

2.4. Extension Approaches in Ethiopia during different Regimes

Extension approaches in Ethiopia differ with different political regimes. During the imperial regime transfer of the responsibility for national extension administration to the Ministry of Agriculture, extension service became one of the departments in the Ministry. Stommes, E. and Sisaye, S. 1979 state the situation of agricultural extension in the 1960s succinctly: Since more than 60 per cent of the peasant population live at least a half-day's walk from all-weather roads and since the few extension agents had been assigned along all major highways, there was relatively little contact between extension agents and farmers.

Under the military regime the following 1974 revolution, the new military regime enforced land reform March 1975; the land reform proclamation banned the private ownership of rural lands and declared that land would be distributed to the tillers without compensation to former owner. But because of the political instability the extension system can no go far. And In the The current Agricultural extension system takes Agriculture as it is a sector with great potential for improving rural livelihood and eradicating poverty. Resting on this potential, the government seeks to double agricultural production during the Growth and Transformation Plan (GTP) period by scaling up best practices, incentivizing production of high value crops, and expanding irrigation development and natural resource conservation. So that it facilitates the doubling of agricultural productivity of smallholder farmers by end of the GTP in 2015. This goal is achievable with the strategies government has identified since the underlying strategy is to diffuse agricultural best-best practices from the model to the rest of the farmers, the role of agricultural extension services is critical in realizing this goal. It calls for cost-effective and innovative approaches to the way the agricultural sector generates and disseminates new knowledge and information to smallholder farmers (UNDP/Ethiopia, 2012).

2.5. Description of Extension Approaches in Ethiopia

The first comprehensive package project, the (CADU) was established in September 1967 and was financially backed by the Swedish International Development Authority (SIDA). CADU aimed at a general socioeconomic development. According to Belay (2003) the project region was divided into extension areas where agricultural extension agents and model farmers demonstrated the effects of new agricultural techniques. Schulz (1981) underlined the fact that the distribution of CADU loans between tenants and landowners has always been biased in favor of owners and so proportionately, there have been roughly only half as many tenants on the credit list as there are in the target population.

The MPP I was designed n 1971 in cooperation with SIDA and prepared for the 1971-1974 period and was designed to provide small scale farmer with service considered to be the minimum essential elements for Agricultural development (Mengisteab 1990 and Schulz 1981). MPP I used similar extension approaches as a comprehensive package approach.

In 1980, the Minimum Package Project II (MPP-II) was developed with funding from The World Bank, International Fund for Agricultural Development (IFAD) and SIDA. And aimed to improve crop and livestock productivity, increase the production of agricultural raw materials for domestic use and for export, enhance soil and water conservation activities, establish various farmer organizations, and construct rural roads, grain stores and agricultural offices (Gebremedhin, 2006).

PADEP was designed to bring perceptible changes in peasant agriculture through concerted and co-ordinated efforts in the areas of agricultural research and extension. Agricultural development activities and empowering and giving considerable attention to zones which were to be the centers of development efforts (Belay, 2003). And PADEP focused on the high potential areas of the country (Gebremedhin, 2006).

PADETES was formulated in 1994/1995 primarily based on the experience and much touted success story of SaSakawa Global 2000 program (Gebrekidan *et al*., 2004).

According to Kassa, 2005 PADETES The strategy was a technology-based, supply-driven intensification which consisted of enhanced supply and promotion of improved seeds, fertilizers, on-farm demonstrations of improved farm practices and technologies, improved credit supply for the purchase of inputs and close follow up of farmers extension plots.

Farmer Field Schools (FFS) are a participatory method of learning, technology development, and dissemination based on adult-learning principles such as experiential learning. Farmer field schools (FFS) have been a recent topic of debate as to their impact in SSA and elsewhere (Davis, 2006). And The FFS themselves are undergoing reforms to address these issues, such as becoming self-financed (Khisa, 2007).

The FTCs were designed as local-level focal points for farmers to receive information, training,

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demonstrations, and advice, and included both classrooms and demonstration fields. The FTCs are expected to form an important node between extension and farmers in the agricultural sector. FTCs are managed at the kebele level, but funding for capital, operational, and salary costs come from the Woreda level (Davis et al., 2009) The centers FTC are staffed by DAs and are responsible for providing extension activities in rural areas. Core activities concern livestock, crop production, and NRM (Davis et al., 2010).

ATVETs train development agents (DAs) to work in Farmer Training Centers (FTCs) to enhance the knowledge base and skills of farmers and there by provide the institutional framework for increasing the efficacy of agricultural extension services. The government invested in ATVET centers to train DAs charged with carrying out agricultural extension activities with farm households. By the close of 2008, the program had trained 62,764 DAs at the diploma level (Davis et al., 2010).

The ATVETs work closely with farmers to provide technical information in crop production, livestock production and natural resource management. NGOs like FAO, Farm Africa, Red Cross, and Bio-Safe have been implementing very innovative extension systems (Aberra and Teshome, 2009). In addition to their training role, the ATVET colleges have expanded their mission to include provision of non-formal specialized short-term training, skill gap training, entrepreneurial training, applied technology transfer, and services for farmers, agriculture businesses, and the public sector (Kreuchauf, 2008)

3. THE MAIN FINDING AND DISCUSSION OF HISTORY AND EVOLUTION AGRICULTURAL EXTENSION IN ETHIOPIA

3.1. Origin and Development of Agricultural of extension work in Ethiopia

Agricultural extension work in Ethiopia began in 1931 with the establishment of the Ambo Agricultural School which is one of the oldest agricultural institutions in Ethiopia and the first agricultural high school offering general education with a major emphasis on agriculture.

Apart from training students and demonstrating the potential effects of improved varieties and agricultural practices to the surrounding farmers, the school did not do extension work in the sense of the term that we understand today. It was with the creation of the Ministry of Agriculture in 1943 that the country witnessed the commencement of limited extension activities in different areas. Even then, as there was no separate division in the Ministry responsible for extension work, different services to farmers were made available by the various divisions of the Ministry. According to Haile Selassie (1959) the services rendered were more of a regulatory nature and included providing advice in soil conservation through the grow-more-trees campaign; better variety of seeds and seedlings; cleaning and seed selection; the protection of game fish; the preservation of hides and skins and so on.

However, real agricultural extension work began in the early 1950 following the establishment of the Imperial Ethiopian College of Agriculture and Mechanical Arts (IECAMA, now Haramaya University) with the assistance of the United States of America under the Point Four Programe. The academic programme of the College was modeled on the Land Grant College system with three fundamental but related responsibilities; training high level manpower; promoting agricultural research and disseminating appropriate technologies. The role played by IECAMA in developing the agricultural extension system is considerable. In fact, when the College was founded it was given the mandate to develop and deliver a national programme in agricultural extension. To this end, on October 1 1954, it employed two Ethiopians who had graduated from the Ambo Agricultural School. Up to 1943 the responsibility for agricultural matters in Ethiopia was vested in the Ministry of Commerce, Industry and Agriculture.

By a law issued early in 1943, a Council of Ministers and 12 Ministries were set up. One was the Ministry of Agriculture as extension agents. They were stationed at Assela (Arsi) and Pitche (Shoa) to establish demonstrations with co-operative farmers. During the next few years the number of extension agents increased considerably and they were stationed at posts all around the country.

According to Huffnagel (1961), from the beginning of the extension service efforts were made to obtain men who had, at least, a basic knowledge of Ethiopia's agriculture. An eighth grade education was the minimum requirement for the first selected groups of agents and trainees. From later candidates a twelfth grade education-either at Jimma or Ambo [agricultural high schools]-was demanded.

Prior to their deployment, agents were trained in various fields (such as modem techniques of crop production, modem animal husbandry practices, the operation and care of small, improved farm implements) and extension methodologies. Moreover, they took part in in-service training on a regular basis. The major extension activities were concentrated in areas where the college had experimental stations. These included the main campus at Alemaya, the central experiment station at Debre Zeit and the Jimma Agricultural and Technical School.

3.2. Different levels of Agricultural Extension

3.2.1. At Federal level

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Ministry of Agriculture (MoA): The ministry is responsible for developing and refining the overall agricultural development strategies and policies for the country, with input from the regions and other stakeholders. Similarly, MoA is mandated to develop the national agricultural extension strategy through the provision of policy direction, financial support, technical backstopping and M & E.

Agricultural Extension Directorate (AED): According to recent restructuring, AED comprises five Directorates namely, Crop Production; Agricultural Farm Mechanization; Advisory and Training Services; Coffee, Tea and Spices; and Smallholder Farmers' Horticulture Development.

With its particular emphasis on agricultural extension services, AED has the key roles to lead and guide the national extension system by ensuring appropriate linkages among partners, establishing effective synergies and working relationships within the Directorate and across departments, ministries and other relevant NGOs for successful implementation of the key activities.

3.2.2. At Regional level

The Bureau of Agriculture Development (BoAD): The BoAD oversees the integration and harmonization of activities outlined in the strategy document with other development activities within the regions. Regional Bureaus of Agriculture (BoA) develop and/or adopt packages and provide support to Woreda offices of agriculture in delivering extension services. They also facilitate coordination and alignment across development partners at regional levels so that coordinated agricultural development services are delivered at the Woreda level. In some regions, Zonal Agricultural Offices are also expected to provide coordination and technical support for Woreda Offices of Agriculture. There are nine regional administrations and 69 zones, in the country.

The Regional Cabinet in each region is responsible for the review and approval of Agricultural Extension Services, annual plans and budgets submitted by Woreda through the BoA. The BoA also reviews the biannual and annual progress reports on implementation of the regional Agricultural Extension Services and budget utilization. The Regional Cabinets ensure that Regional Councils will be regularly informed on the implementation of agricultural extension services as a whole and that the Regional Council's decisions with regard to broader regional development are reflected on the agricultural extension services and are well addressed.

The Regional Agricultural Extension Core Process Owner is the Agricultural Extension Services Manager, accountable to BoAD Head, and leading the coordination of other agencies through the regional ADPLAC forum. In this coordination and leading role, the process owner is responsible for: a) informing and mobilizing the Woreda Agricultural Development Offices (WoADO) about appropriate planning of activities contained in the strategy document, b) developing and consolidating annual implementation plans and budgets for further implementation, c) ensuring close collaboration and coordination between implementing agencies both within agriculture and outside the agricultural development sector; d) ensuring that plans of extension-based NGOs will fit in the overall objectives of the agricultural extension, and e) ensuring appropriate integration of the agricultural extension plans and activities with those of the overall development programs and particularly the strategy document. Moreover, the Regional AED is directly responsible for implementing the envisaged demand-driven extension services to households in each region. In broad terms, it will re-orient its system and staff towards a demand-driven extension approach; lead the special multi-agencies and ADPLACs to support the scale up of improved technologies and best practices in the regions.

3.2.3. At Woreda level

The Woreda is the level of government that determines needs of the communities, undertakes integrated planning and implements activities outlined in the strategy document. It ensures that agricultural extension activities are in line with the Woreda development agenda and the Woreda integrated plan.

The Woreda Agriculture and Rural Development: The WoARD is the administrative level in the Woreda where extension services are designed, financed and delivered. Including Addis Ababa, the country has a total of 740 administrative Woreda that can serve as a nodule where regional and local level planning is harmonized. In most cases the Woreda Agricultural Development Office (WoADO) is staffed with different technical experts having various expertises to give training and technical supports to DAs on implementation of the required extension services. In addition, some institutions such as farmers' cooperatives for input supply or marketing, community-based organizations, NGOs, and private firms are supporting the WoAO to provide effective and efficient extension services to the local communities. Cooperatives and unions also provide a wide variety of services, including input supply management, grain marketing, and the supply of consumer goods to members. The Woreda Administration Council is responsible for the overall coordination of these institutions at the Woreda Level. It is responsible institutionalize bottom up service delivery. It will ensure that the Woreda extension unit/experts and extension workers work together to ensure effective extension services delivery.

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3.2.4. At Farmers Training Centers

Farmer Training Centers are identified to be the entry point for the provision of effective extension services. As clearly mentioned in FTC guidelines (MoA, 2009) FTCs have been established to perform tasks such as conducting certificate and non-certificate farmer training, promotion of the use of improved technologies and practices, gathering, organizing and disseminating information relating to market, weather, etc. and help in solving individual farm-management problems, and addressing other community concerns like natural resources management. Besides, FTCs are a reliable way to ensuring bottom-up extension service delivery through their efforts to create and facilitate dialogue with farmers. In general, FTCs are expected to ensure the implementation of effective extension services at household levels through their effort to address male, female and youth farmers. However, public extension and the FTCs are often known for their lack of adequate basic infrastructure and facilities, skills, budget for operations, appropriate approaches and tools, and linkages for accessing knowledge and information (Lemma *et al.*, 2010).

3.3. Extension Service in Ethiopia

3.3.1. What is agricultural Extension?

Extension is a series of embedded communicative interventions that are meant, among others, to develop and /or induce innovations which supposedly help to resolve (usually multi actor) problematic issues.

Agricultural extension provides research-based educational and informational programs typically for rural populations. Historically, agricultural extension assisted farm people through educational procedures aimed at improving farming methods and techniques, increasing production efficiency and income, and bettering standards of living. However, increasingly extension serves serve both the rural and urban populations with a wide range of programs aimed at helping to improve beneficiaries' quality of life.

Extension service has meant different things to different people. Moris (1991) defined extension as the mechanism for information and technology delivery to farmers. This conceptualization of the extension service has been the basis for the Transfer of Technology (TOT) extension model. A more comprehensive definition of extension service is given by the World Bank as „A process that helps farmers become aware of improved technologies and adopt them in order to improve their efficiency, income and welfare (Purcell D.L. and Anderson JR.1997)

Agricultural extension can be defined as the entire set of organizations that support and facilitate people engaged in agricultural production to solve problems and to obtain information, skills, and technologies to improve their livelihoods and well-being (Birner et al., 2006). This can include different governmental agencies (formerly the main actors in extension), non-governmental organizations (NGOs), producer organizations and other farmer organizations, and private sector actors including input suppliers, purchasers of agricultural products, training organizations, and media groups (Neuchâtel Group, 1999).

3.3.2. Non-governmental organizations

Ethiopia has a long tradition of informal community-based organizations that operate at the local level and offer mutual socio-economic support to their members. Formal civil society that is, organizations with legal personality did not exist until the 1973-1974 and 1984-1985 famines when many more non-governmental organizations (NGOs) emerged with a focus on relief and humanitarian services. The number of NGOs increased substantially after the downfall of the Derg regime in 1991, and most recently the Government adopted the Proclamation to Provide for the Registration and Regulation of Charities and Societies (CSP), the country's first comprehensive law governing the registration and regulation of NGOs. NGOs are becoming an important feature of Ethiopia's agricultural innovation system, and many are now investing heavily in sustained agriculture and rural development. They operate at all levels: national, regional, zonal, Woreda, and kebele. In many rural areas, they collaborate with agricultural bureaus or agricultural offices at the Woreda level. (http://www.worldwide-extension.org/africa/ethiopia/s-ethiopia)

3.3.3. Private extension

Private extension schemes involve fee-for-service extension provided by private firms with no public support, and are clearly private. Considering both the market failures of private extension systems in which privatization reduces social welfare provision, and the public extension failures in which privatization increases social welfare provision.

Hanson and Just (2001) argue that "A universal movement towards paid extension is not in the public interest". They conclude that "Optimality calls for a mix of public, private, and paid extension including policy support of private extension".

3.3.4. Extension approach and delivery

Extension services provided in most part of the country can be categorized in to three groups: - Household Package, Regular Package and Minimum Package. The current

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extension service in Ethiopia is characterized by:- Top-down approach, Non-participatory, Supply driven not demand driven, Gender bias extension services, Lack of staff morale, Capacity and capability of staff, Development agents involvement in non-extension activities, Lack of qualified extension supervisors and Insufficient appropriate and relevant technology options both for on crops and livestock sector Inadequate public funding

3.4. Extension Approaches of Ethiopia during different Regimes.

A review of extension activities during the last 50 years reveals that a range of extension approaches has been used. The approaches tended differ with each successive political regime. In what follows the extension approaches used by the different political regimes are presented separately.

3.4.1. Under the Imperial Regime

Following the transfer of the responsibility for national extension administration to the Ministry of Agriculture, extension service became one of the departments in the Ministry. When the Ministry decentralized its departments by establishing provincial offices, extension provincial supervisors were appointed in all the 13 provinces of the country (with the exception of Eritrea). Each supervisor was in charge of between six and eight extension agents. The latter were located along the main roads in the country and covered an area up to 25 or 30 km from their headquarters. Stommes, E. and Sisaye, S. 1979 state the situation of agricultural extension in the 1960s succinctly: Since more than 60 per cent of the peasant population live at least a half-day's walk from all-weather roads and since the few extension agents had been assigned along all major highways, there was relatively little contact between extension agents and farmers.

The feudal nature of the social structure in rural areas had also limited contacts and advice of the extension agents to big landlords and influential farmers. Up until the middle of 1960s, policymakers paid little attention to the development of peasant agriculture. For instance, during the First Five- Year (1957-1962) and the Second Five-Year (1963-1967) development plans, despite its importance to the national economy, agriculture received only 13.7 per cent and 2 1.3 per cent of the total investment, respectively. Even worse, almost all the investment allotted to the agricultural sector was channeled to the expansion of large-scale commercial farms engaged in the production of cash crops for export and raw materials for local industries.

Following the increased realization of the continued stagnation of agriculture and pressure from international aid donors, it was only in its Third Five-Year development plan (1968-1973) that the government gave formal recognition to the peasant sector and made attempts to modernize it.

3.4.2. Under the Military Regime

Following the 1974 revolution, the new military regime enforced land reform 0114 March 1975.The land reform proclamation banned the private ownership of rural lands and declared that land would be distributed to the tillers without compensation to former owner. Because of the political instability the extension system cannot serve the farmer. It also limited the size of land to be allotted to any single family to a maximum of 10 hectares. Moreover it prohibited the transfer of land by sale, exchange, succession, mortgage, lease or other means. Chapter 3 of the proclamation contains provisions for the establishment of peasant associations, the basic instrument for implementing the land reform.

3.4.3. Current Extension Service in Ethiopia

Agriculture is a sector with great potential for improving rural livelihood and eradicating poverty. Resting on this potential, the government seeks to double agricultural production during the Growth and Transformation Plan (GTP) period by scaling up best practices, incentivizing production of high value crops, and expanding irrigation development and natural resource conservation. This will be supported by interventions aimed at transforming the agricultural system so that it facilitates the doubling of agricultural productivity of smallholder farmers by end of the GTP in 2015. This goal is achievable with the strategies government has identified.

The challenge however lies in implementing these strategies to enable smallholder farmers to scale-up productivity and increase production almost two-fold by the end of the GTP period. Since the underlying strategy is to diffuse agricultural best-best practices from the model to the rest of the farmers, the role of agricultural extension services is critical in realizing this goal. It calls for cost-effective and innovative approaches to the way the agricultural sector generates and disseminates new knowledge and information to smallholder farmers (UNDP/Ethiopia, 2012).

Current extension service in the country was almost exclusively funded by government and some local and international non-governmental organizations. The fact that the extension service is provided almost by government indicates the urgent need to devise strategies to make the extension services pluralistic (multi-provider). Here in addition to government extension services there must be privet extension service especially on the area of cash crop and other commodities.

3.5. Description of Extension Approaches in Ethiopia

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3.5.1. Chilalo Agricultural Development Unit (CADU)

Following CADU, other projects with very similar approaches were also initiated with financial assistance from different donors. These included Wolayita Agricultural Development Unit (WADU), 1970; Ada'a Woreda Development Project (ADDP), 1972; Tach Adiyabo and Hadekti Agricultural Development Unit (TAHADU); Southern Region Agricultural Development Project (SORADEP); and Humera Agricultural Development (HAD). Since all of these programs and projects were operational in only small areas, the vast majority of the country was out of their reach. Evaluation of the comprehensive package approach led to the conclusion that the approach did not benefit smallholders, and was too expensive to scale out and up both financially and in terms of man power requirements. The first comprehensive package project, the (CADU) was established in September 1967 and was financially backed by the Swedish International Development Authority (SIDA). CADU aimed at a general socioeconomic development. Towards this end it integrated planning, credit and marketing facilities, price stabilization, and mechanization, research into inputs and intermediate technologies and training local project employees. The method CADU adopted in reaching the peasants was basically that of demonstration. The project region was divided into extension areas where agricultural extension agents and model farmers demonstrated the effects of new agricultural techniques (Belay, 2003).

It was soon realized that the comprehensive package projects failed to serve the very people for whom they were destined the tenants and small-scale farmers. Most importantly, the principal beneficiaries were landlords and commercial farmers who reaped almost all the services rendered. In evaluating the experience from CADU, Schulz (1981), underlined the fact that the distribution of CADU loans between tenants and landowners has always been biased in favor of owners and so proportionately, there have been roughly only half as many tenants on the credit list as there are in the target population. Other authors have shown that, by encouraging the process of mechanization in larger commercial farms, the package projects accelerated the eviction of tenants (Betru, 1975; EPID, 1970; Mengisteab, 1990; Task Force on Agricultural Extension, 1994a; Tesfai, 1975).

3.5.2. Minimum Package Project (MPP-I/ MPP II)

It became apparent that the comprehensive package projects were too expensive, both financially and in terms of trained manpower requirements, to warrant replication in other areas of the country. As a result, in 1971 the government, in co-operation with SIDA designed an alternative strategy envisaged to be compatible with the availability of resources called the Minimum Package Project I (MPP-I). MPP-I was prepared for the 1971-1974 period and was designed to provide small scale farmers with services considered to be the minimum essential elements for agricultural development (Mengisteab 1990, Schulz 1981).

The objective of the MPP-I was to provide smallholders with extension and input supply services. As an implementing structure, the then MOA established a department known as Extension and Project Implementation Department (EPID). MPP-I used similar extension approaches as the comprehensive package approach, which was using demonstration plots and model farmers (Gebremedhin 2006). It was also in 1971 that the government established the Extension and Project Implementation Department (EPID) in the Ministry of Agriculture. EPID was commissioned to administer the minimum package projects and supervise the activities of comprehensive package projects. MPP-I was supposed to reach a large number of farmers by making use of the technologies generated and tested by the comprehensive package projects (Belay, 2003).

MPP-I failed to have a significant impact on the agricultural sector because the government was reluctant to put in place the necessary reform measures in the areas of land tenure, tenant landlord relationships and the organizational and administrative systems of the different institutions entrusted with agricultural development of the country (Harbeson, 1990; Mengisteab, 1990; Schulz, 1981).

The major drawbacks of the MMP-I also included minimal attention given to the livestock sector, not benefiting smallholders, and not being able to reach the vast majority of the farmers. The Derg regime, which toppled the Imperial regime in 1974, continued with the MPP-I for four years, although the implementation of the project was constrained by political instability and changes in the government structure. In 1980, the Minimum Package Project II (MPP-II) was developed with funding from The World Bank, International Fund for Agricultural Development (IFAD) and SIDA. The MPP-II aimed to improve crop and livestock productivity, increase the production of agricultural raw materials for domestic use and for export, enhance soil and water conservation activities, establish various farmer organizations, and construct rural roads, grain stores and agricultural offices (Gebremedhin, 2006).

During its implementation (1981-1985), the MPP-II did not attain its stated objectives because the very limited numbers of extension agents available in the country were made to cover as wide an area as possible without adequate facilities and logistical support. The same agents were overloaded with different assignments, such as collecting taxes, promoting producers' co- operatives, collecting loan repayments and mobilizing labor and resources on the part of public authorities, which were, at times, not in their

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domain of responsibility (Task Force on Agricultural Extension 1994 a). The development centers that were established under MPP-I were closed and extension personnel were re-assigned to the Woreda level. MPP-II was phased out in 1985 and was replaced by a new program called Peasant Agricultural Development Program (PADEP) (Gebremedhin, 2006).

3.5.3. Peasant Agricultural Development Program (PADEP)

PADEP was designed to bring perceptible changes in peasant agriculture through concerted and co-ordinated efforts in the areas of agricultural research and extension.

The strategy was based on a critical evaluation of past extension strategies and underscored the importance of stratifying the country into relatively homogeneous zones, decentralizing the planning and execution of agricultural development activities and empowering and giving considerable attention to zones which were to be the centers of development efforts (Belay, 2003). PADEP classified the country into eight development zones: Northwestern Ethiopia, Western Ethiopia, Southern Ethiopia, South eastern Ethiopia, Eastern and South eastern Ethiopia, Central Ethiopia, North eastern Ethiopia and Tigray. However, only the programs for North western Ethiopia, Eastern and South eastern Ethiopia. Hence, PADEP focused on the high potential areas of the country (Gebremedhin, 2006).

The principal objectives of the PADEP programme were: increasing food production at least to the level of self-sufficiency; developing the production of cash crops for export and raw materials for domestic industries; increasing rural sector employment opportunities; supporting and encouraging the development of rural co-operatives; preventing further soil depletion and introducing suitable farming system in erosion prone areas of the country (Belay, 2003).

PADEP used the Training and Visit (T&V) extension approach, which was pilot-tested in six Woreda three years prior to its implementation. The PADEP witnessed the formation of the research extension liaison committees in 1986, the first of its kind in the country by then. Because of the ideological basis of the Marxist military regime, most of the extension services and input supply went to the producer's co-operatives, and smallholders were again left out of the development process (Ibrahim 2004). The PADEP program continued for four more years under the Ethiopian People's Revolutionary Democratic Front (EPRDF) regime which overthrew the Derg in 1991. The PADEP was then replaced by a new extension program called Participatory Demonstration and Training Extension System (PADETES) in 1995. PADETES became the first extension program to be developed without foreign assistance and fully funded by the government budget (Ibrahim, 2004).

3.5.4. Participatory Demonstration and Training Extension System (PADETES)

PADETES was formulated in 1994/1995 primarily based on the experience and much touted success story of SaSakawa Global 2000 program (Gebrekidan et al., 2004).

The strategy was a technology-based, supply-driven intensification which consisted of enhanced supply and promotion of improved seeds, fertilizers, on-farm demonstrations of improved farm practices and technologies, improved credit supply for the purchase of inputs and close follow up of farmers‟ extension plots (Kassa, 2005).

PADETES was developed after a critical evaluation of the past extension approaches and the experience of SG 2000. Its major objectives included increasing production and productivity of small-scale farmers through research-generated information and technologies; empowering farmers to participate actively in the development process; increasing the level of food self-sufficiency; increasing the supply of industrial and export crops and ensuring the rehabilitation and conservation of the natural resource base of the country (Task Force on Agricultural Extension, 1994b).

PADETES system that now reaches some 35 to 40 percent of farm households in rural areas provides a small amount of inputs through packages provided directly to farm households, and functions with a low number of visits by public DAs (Davis et al., 2010). Several reviews of the PADETES program have been performed. The major one, conducted by the EEA/EEPRI, evaluated PADETES in 2005 (EEA/EEPRI 2006).

According to the results of the study, Ethiopia's current PADETES model has shown the following significant achievements:- Reached many farmers equitably, Increased productivity in some cases, Increased production of grains, Increased use of fertilizer and improved seed and Increased numbers of participating households in extension packages

Weaknesses

• Majority of extension packages are on crop production. Extension is supply-driven, Extension packages are formulated at the federal level and there is a lack of regional strategies, Narrow focus on cereal crops, Limited focus on cash crops and animals, Incomplete use of packages by farmers, with 75 percent dis adoption (started but not continued), Limitations in infrastructure, marketing, and inputs affected implementation, Limited participation by women farmers and Limited training for extension workers.

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The PADETES program has been an aggressive extension intervention that has involved 4.2 million participants from a total of about 10 million small-scale farmers in the country (Kelemework and Kassa, 2006)

3.5.5. Farmer Field Schools (FFS)

Farmer Field Schools are a participatory method of learning, technology development, and dissemination based on adult-learning principles such as experiential learning. Groups of 20-25 farmers typically meet weekly in an informal setting in their own environment. Farmers are facilitated to conduct their own research, diagnose and test problems, and come up with solutions. Both to ensure sustainability and to enhance the sense of ownership and responsibility, FFS programs are encouraging cost sharing (Davis, 2009).

Farmer field schools (FFS) have been a recent topic of debate as to their impact in SSA and elsewhere (Davis, 2006). Although many positive reports exist on the benefits of the FFS approach, some studies have called into question their overall impact and financial sustainability. FFS have shown remarkable impact in terms of pesticide reduction, increases in productivity, knowledge gain among farmers, and empowerment. However, these effects have been generally confined to the most directly-engaged farmers, rather than demonstrating adequate capacity for scaling up for greater impact. The FFS themselves are undergoing reforms to address these issues, such as becoming self-financed (Khisa, 2007).

3.5.6. Farmer Training Centers (FTCS)

Since 2002, more than 8,489 FTCs have been built at the kebele (the lowest administrative division) level. The centers are staffed by DAs and are responsible for providing extension activities in rural areas. Core activities concern livestock, crop production, and NRM (Davis et al., 2010). FTCs at the kebele level were also identified as a critical resource needed to enable extension delivery. The FTCs were designed as local-level focal points for farmers to receive information, training, demonstrations, and advice, and included both classrooms and demonstration fields. The FTCs are expected to form an important node between extension and farmers in the agricultural sector. FTCs are managed at the kebele level, but funding for capital, operational, and salary costs come from the Woreda level (Davis et al., 2009)

Each FTC is staffed by three DAs (one each in the areas of crops, livestock, and NRM) and supported by an itinerant DA covering three FTCs and trained in cooperatives management or a related field (Spiel man et al., 2006). Each DA is expected to train 120 farmers per year in his or her field of specialization. He or she is also expected to provide modular training to 60 farmers every six months in his or her field of specialization (Ethiopia MOFED, 2007). Researchers agree that the FTCs should be the focal point for all the actors within the innovation system (Abate, 2007). However, the FTCs need monitoring and support (Aberra and Teshome, 2009). This is in addition to having a clear business or operational strategy and knowledgeable DAs who are capable of running them.

3.5.7. Agricultural technical and vocational education training (ATVET)

ATVETs train development agents (DAs) to work in Farmer Training Centers (FTCs) to enhance the knowledge base and skills of farmers and there by provide the institutional framework for increasing the efficacy of agricultural extension services. Before the ATVETs, the universities were the only institutions offering training at degree and diploma levels in general agriculture. In 2000, the government invested in ATVET centers to train DAs charged with carrying out agricultural extension activities with farm households. By the close of 2008, the program had trained 62,764 DAs at the diploma level (Davis et al., 2010).

Agricultural education and training institutes such as the ATVETs are conventionally viewed as a means for building human and scientific capital, but it is important to recognize that this training also has a vital role in building the capacity of organizations and individuals to transmit and adapt to new applications of existing information, new products and processes, and new organizational cultures and behaviors. It is thus important to improve training systems by strengthening the innovative capabilities of organizations and professionals; changing organizational cultures, behaviors, and incentives; and building innovation networks and linkages (Davis et al., 2007; Spielman, Davis et al., 2008).

The ATVETs work closely with farmers to provide technical information in crop production, livestock production and natural resource management. NGOs like FAO, Farm Africa, Red Cross, and Bio-Safe have been implementing very innovative extension systems (Aberra and Teshome, 2009)

In addition to their training role, the ATVET colleges have expanded their mission to include provision of non-formal specialized short-term training, skill gap training, entrepreneurial training, applied technology transfer, and services for farmers, agriculture businesses, and the public sector (Kreuchauf, 2008). But the Resources allocated to many ATVETs are insufficient to conduct practical education (including training on tractors, combine harvesters, or other machinery, and experimentation with plant and animal breeding materials); to assist students in undertaking practical attachments (by covering their travel and living expenses during long-term attachments in the private sector or with public extension services); and to appoint qualified B.Sc.-level

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instructors with sufficient experience and practical training. Moreover, ATVETs continue to depend on very traditional educational approaches and learning philosophies that revolve around conventional modalities of instruction, make limited use of modern educational infrastructure or equipment, and provide professionals and graduates with a relative small set of technical skills and abilities. Lectures and materials are often in English, although students‟ command of the language is usually quite limited and curriculum content tends to overlook the importance of creating opportunities for students to build practical skills in decision making, creative thinking, problem solving, and independent thought (Davis et al., 2007).

4. CONCLUSION

Extension service in Ethiopia has passed through at least five stages: the land grant extension system provided by the Imperial Ethiopian College of Agriculture and Mechanical Arts (IECAMA), the Comprehensive Package Programs (CPPS), the Minimum Package Projects (MPPs), the Peasant Agricultural Development Program (PADEP), and the Participatory Demonstration and Training Extension System (PADETS). All extension services prior to the PADETS were donor driven and funded from external sources. Extension service provided by IECAMA in the early 1950s was limited to areas surrounding the experiment stations that were being operated by the college. Comprehensive package programs were more of rural development approaches than just extension service programs and were limited to only few high potential areas. Minimum package projects had wider coverage compared with the CPPs, but still failed to cover the majority of the country. PADEP was a victim of the ideological doctrine that was being followed by the Marxist military regime and so limited its services to producers' co-operatives. The initial success recorded by PADETS also failed to be sustained due to various reasons.

The current extension service appears to give more attention to smallholders compared to its predecessors. The realization that farmers need to adopt technologies voluntarily and that DAs should not be involved in non-extension activities are encouraging developments. However, these realizations need to be fully operationalized. The low morale and high mobility of extension personnel is another major problem with the current extension system. Serious shortage of manpower, budget and facilities such as transportation facilities also need close attention. The major problems of the extension system include focus on the transfer of technology (TOT) model, non-participatory and top–down approach, and its supply driven nature (as opposed to demand driven). An extension approach that is more participatory and focuses on human resource development rather than on technology transfer per se would enhance the impact and sustainability of the extension service. The focus of the extension system has been on cereal crop production and little attention was given to other subsectors, especially the high value crop commodities and livestock subsector. The market oriented agricultural development strategy has raised the importance of the high value crop commodities, which indicates that the extension system should accord due attention to the development of these commodities.

The high potential of the livestock sector still remains untapped, partly because of the little attention accorded to it by the extension service.Problems related to limited coverage, policy environment, availability of complementary institutional support services and shortage of relevant technologies have been among the enduring constraints confronting the agricultural extension service globally. While the political commitment to accelerate agricultural development has been high in Ethiopia since 1991, the other limiting factors are still critical issues in the country's extension service. With the devolution of power to the regions and woredas in Ethiopia, the extension service has also seen some degree of decentralization, although top–down approach is still prevalent. Effective decentralization in the extension service can induce flexibility and adaptability in the service provision.

Market oriented development strategies developed by each of the woredas have not been accompanied by an explicit consideration of how to align the extension service to fit the requirements of this direction of development. In particular, the traditional thinking of considering market support services as being out of the mandate of the extension service needs to change. The staff composition and skills will have to be considered in line with the new development plans.

The future of extension service in Ethiopia will be centered on the Farmer Training Centers (FTCs). The FTCs are expected to play multiple roles in rural development. For the extension service, and in particular the FTCs to adapt its approach and roles towards a market driven agricultural development, new operational service models will have to be developed. Such models should evolve through a learning process, rather than being 'dictated'.

The extension activities of the FTCs need to incorporate the lessons of the extension services to-date. The training provided by ATVETs need to be evaluated to determine their effectiveness in preparing the graduates for a participatory and innovative extension approaches, since the full participation of farmers in technology development and extension program planning and implementation is decisive for the success of the extension services.

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